REMARKS

Claims 19-28 are pending in this application. Claims 19 and 22-28 are withdrawn as allegedly being directed to non-elected inventions. Claim 20 is amended herein for clarity and to more particularly define the invention. Support for this amendment is found in the language of the original claims and throughout the specification, for example, at least in claim 19; and on page 6, line 29. No new matter is added by this amendment and its entry and consideration are respectfully requested. In light of the amendment presented herein and the following remarks, applicants respectfully request reconsideration of this application and allowance of the pending claims to issue.

The issues raised in the Office Action dated December 19, 2006 (hereinafter "the Action) are addressed individually below in the order presented therein.

I. Election/Restriction.

The Action states that applicants' election of Group V, claim 20 and SEQ ID NO:109 and cancellation of claims 1-18, as well as addition of claims 21-28 are acknowledged. The Action further states that newly added claim 21 belongs to Group V, whereas claims 22-26 belong to a separate invention that is drawn to a method of using the nucleotide sequence/vector of Group V. Action, page 2. Applicants respectfully traverse this restriction and note that new claims 22-24 are product claims similar to new claim 21, which has been grouped with Group V, and are not process claims. Therefore the Examiner's argument that the restriction is required between product and process claims does not apply to claims 22-24. Thus, applicants respectfully request reconsideration of the restriction at least regarding claims 22-24 and ask that these three claims be examined with claims 20 and 21. Should the present restriction be maintained, applicants request a detailed explanation of why claims 22-24 should be searched and examined separately from claims 20 and 21.

II. Specification

A. The Examiner has requested that the status of parent Application No. 09/289,346 as recited at page 1, line 4 be indicated. Action, page 4.

The specification is amended herein to indicate the status of the '346 application as requested. Thus, applicants respectfully request the withdrawal of this objection.

B. The Action states that the specification is objected to for allegedly failing to refer to a sequence identifier for each of the polypeptide sequences in Figures 3 and 11. Action, page 4.

The specification is amended herein on page 7, lines 31-32, of the specification to provide a sequence identifier for the wild type sequence referred to in Figure 3. The specification is further amended herein on page 11, lines 9-13, to provide a sequence identifier for the consensus sequence referred to in Figure 11. Further, enclosed herewith is a substitute Sequence Listing, which includes the sequence identifier added to Figure 11, and a Statement in Support of the Substitute Sequence Listing. Accordingly, applicants respectfully submit that the objection to the specification is overcome and respectfully request its withdrawal.

C. The Action states that the drawings are objected to for allegedly being inconsistent. Action, page 4.

Applicants provide an amended Figure 4 herewith in which the figure is amended to recite N-DR172, thereby providing consistency in the recitation of this mutation throughout the figures and Table 3.

Accordingly, applicants respectfully submit that the objection to the drawings is overcome and respectfully request its withdrawal.

III. Priority.

Applicants acknowledge that the priority for the instant invention is August 4, 2003.

IV. Rejection under 35 U.S.C. 112, first paragraph.

The Action states that claims 20 and 21 stand rejected under 35 U.S.C. 112, first paragraph, for allegedly failing to comply with the enablement requirement. Action, page 6. Specifically, the Action states that the specification does not teach that expression of the oligomerization domain of SEQ ID NO:109 from CbLCV or the oligomerization domain of L148 from TGMV could reduce wild-type replication as shown in Example 5 for

oligomerization-domain-fused GST mutants Ala6-9 and Ala 13-14. Action page 8. The Action further states that the specification shows that the mutation of L145 in CbLCV AL1 impairs RBR1 binding in analogous manner to the TGMV L148 mutant and that L148-infected plants displayed a phenotype similar to the those of KEE 146-infected plants. *Id.* The Action then states that Figure 3 and Tables 1 and 2 fail to confirm the ability of the Ala5 oligomerization domain (KEE146 mutant) alone to interfere with wild-type replication. *Id.* The Action concludes that without further guidance, undue experimentation would be required for a person skilled in the art to determine the ability of the oligomerization domain of SEQ ID NO:109 to interfere with wild-type CbLCV replication. Action pages 8-9. Applicants respectfully disagree with this interpretation of the present invention and traverse this rejection.

Enclosed herewith is a Declaration under 37 C.F.R. § 1.132 by Dr. Hanley-Bowdoin (hereinafter "the Hanley-Bowdoin Declaration") in which the present invention is further described and explained and additional data are presented.

Specifically, as described in the specification (e.g., page 17, lines 12-14; page 19, line 24 through page 20, line 24; and page 33, lines 29-32) and in the Hanley-Bowdoin Declaration, paragraph 5, most of the known activities of AL1 are mediated by overlapping domains in the N-terminal half of the AL1 protein. These domains include an Rb binding domain and an oligomerization domain. A mutation in the oligomerization domain can result in reduced viral replication and can also result in reduced binding (Specification, Example 5 and on page 35). However, mutations such as the L145 mutation (SEQ ID NO:109) and the L148 mutation, which occur in the Rb binding domain, are specific for Rb binding and do not result in concomitant loss in AL1 oligomerization activity. Thus, it is not expected that they alone would result in reduced replication as is observed for the oligomerization mutants such as Ala6-9 and Ala 13-14.

The specification teaches that it is the combination of a transdominant mutation such as mutations in the oligomerization domain (and/or mutations in the DNA cleavage and/or ATPase domain) with a Rb binding mutation that allows for the production of stable transgenic plants having increased resistance to geminiviruses (Specification, page 16, line 19 through page 17, line 2; and page 18, lines 7-11). Furthermore, the Hanley-Bowdoin Declaration, in paragraphs 7 and 8, provides additional data showing that such a combination of mutations (an Rb binding

mutation (L148) with a transdominant negative mutation) results in stable, heritable geminivirus resistance.

The L145 mutation in Cabbage Leaf Curl Virus (CbLCV) is the functional equivalent of the L148 mutation in Tobacco Golden Mosaic Virus (TGMV) (Hanley-Bowdoin Declaration, paragraph 9; Specification, page 42, lines 9-23). Therefore, one of ordinary skill in the art would reasonably expect that when used in combination with a transdominant negative mutation, the presence of an L145 mutation, similar to an L148 mutation, would result in stable, heritable resistance to geminivirus infection in transgenic plants (Hanley-Bowdoin Declaration, part 9).

Thus, Applicants respectfully submit that the present specification teaches how to make and use SEQ ID NO: 109, as set forth in claims 20 and 21. Accordingly, applicants respectfully submit that the presently claimed invention complies with the enablement requirement and respectfully request that this rejection be withdrawn.

V. Rejection under 35 U.S.C. 102(b).

The Action states that claims 20 and 21 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Desbiez et al. (*PNAS* 92:5640-5644 (1995)). Action, page 9. Specifically, the Action states that Desbiez et al. teaches a PUC based vector containing a mutant Rep gene from TYLCV. *Id.* The Action further states that the instant claims are drawn to nucleotide sequences/vectors comprising an isolated nucleotide sequence encoding a mutant AL1 comprising a amino acid sequence of SEQ ID NO: 109. *Id.* The Action states that this encompasses any AL1 mutant protein comprising at least two residues of SEQ ID NO:109 and therefore the reference teaches all of the limitations set forth by the instant claims. *Id.*

Claim 20 is amended herein to recite an isolated nucleic acid encoding a mutant AL1 protein comprising the amino acid sequence of SEQ ID NO. 109. Desbiez et al. fails to disclose a mutant AL1 protein comprising the amino acid sequence of SEQ ID NO. 109. Thus, applicants respectfully submit that claims 20 and 21 are not anticipated by Desbiez et al. and respectfully request that this rejection be withdrawn.

VI. Rejoinder of claims 25-28.

Claims 25-28 as presented herein are methods claims that include all of the recitations of

product claims 20-24. Thus, if it is determined that the product claims presented herein are allowable, applicants request review and examination of these method claims in the present application, pursuant to the practice of rejoinder as set forth in section 821.04 of the MPEP. In particular, it is stated therein that if a product claim is elected in a restriction and then found allowable, withdrawn process claims that depend from or otherwise include all of the limitations of the allowable product claim are to be rejoined in the same application.

In view of the foregoing amendments and remarks, applicants respectfully request that all outstanding rejections to the claims be withdrawn and that a Notice of Allowance be issued in due course. The Examiner is encouraged to contact the undersigned directly if such contact will expedite the examination and allowance of the pending claims.

A check in the amount of $630.00 ($450.00 as a fee for two-month extension of time and $180.00 for filing an Information Disclosure Statement) is enclosed. This amount is believed to be correct. However, the Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-0220.

Respectfully submitted,

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Amelia Tauchen